

Amendments to the Specification

The following amendment refers to the original disclosure filed on August 27, 2008.

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On Page 2, please amend paragraph [0008] as follows:

" ~~Fig. 1 is a top view and a sectional view showing the magnetic material detection device in embodiment 1 of the present invention.~~

10 Fig. 1A is a top view showing the magnetic material detection device in embodiment 1 of the present invention.

Fig. 1B is a sectional view showing the magnetic material detection device in embodiment 1 of the present invention wherein the magnet contacts the upper stopper.

15 Fig. 1C is a sectional view showing the magnetic material detection device in embodiment 1 of the present invention wherein the magnet contacts the lower stopper."

On Page 3, please amend paragraph [0010] as follows:

20 "Fig. 1A is a top view of the magnetic material detection device 1 in embodiment 1 of the present invention. Fig. 1B and Fig. 1C ~~is~~ are respectively a sectional view of A-A' in Fig. 1A. Fig. 1B shows the state that the magnet 12 contacts upper stopper 31, and Fig. 1C the state that the magnet 12 contacts lower stopper 32. In Fig. 1B and Fig. 1C, an iron piece 28 (magnetic material) located outside the body of the magnetic material detection device 1 is added,
25 but other material pieces such as nickel piece or cobalt piece which respond to the magnet are also detectable instead of the iron piece 28."

On Page 3, please amend paragraph [0011] as follows:

30 "As shown in Fig. 1A and Fig. 1B and Fig. 1C, a case 10 contains the magnet 12, the Hall IC 14, mounting member 22 and others. Case 10 is made of metal or nonmagnetic materials such as plastic. Mounting member 22 is

sealed by covering opening of the case 10 to prevent air, water and oil from intruding into the case 10. Magnet 12 is displaceable to the side of iron plate 28 in Fig. 1B, in other words, the upper side of Fig. 1B. If the iron piece 28 approaches to gets into an area comprising a given distance "d" from the
5 magnetic material detection device 1 as shown in Fig. 1B, so that resulting in
that the iron piece 28 is relatively strongly magnetized, the magnet 12 is displaced to the side of the iron piece 28 by magnetic force. A "J-shaped" plate spring 30 which is an elastic body, as will be described hereinafter, controls the magnet 12 to ~~be located on the lower side of Fig. 1B~~ contact the lower stopper
10 32 when the iron piece 28 is relatively far from the magnetic material detection device 1 as shown in Fig. 1C where the iron piece's position in Fig. 1B is shown
in dotted line."

On Page 3, please amend paragraph [0012] as follows:

15 "In other words, in case the iron piece 28 is relatively far from the magnetic material detection device 1 as shown in Fig. 1C, plate spring 30 functions to fix the magnet 12 to prevent lateral displacement in Fig. 1B. Plate spring 30 functions to return the magnet 12 to the position before displacement as shown in Fig. 1C, when the iron piece 28 is located relatively far from the
20 magnetic material detection device 1 after being the iron piece 28 is located relatively close to it."

On Page 4, please amend paragraph [0013] as follows:

25 "In addition, displaceable position of the magnet 12 in lower part of Fig. 1B is limited by a the lower side stopper 32. Configuration of the magnet 12 may be a cube, a rectangular solid, a cylinder and others such that the magnet 12 has a side wall which is opposed to and parallel to the outer wall of the Hall IC 14. As an example, the magnet 12 is set in such a way that its north pole is upward in Fig. 1B and its south pole downward in Fig. 1B."

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On Page 5, please amend paragraph [0019] as follows:

5 "There are magnetic field lines 12b which connect the south pole and the north pole in a curve around the magnet 12. In addition, there are isodynamic lines 12c-12e passing through points where magnetic forces are the same. Each isodynamic line 12c-12e crosses perpendicularly with each magnetic field line 12b. Magnetic field line 12b 12d corresponds to, for example, 0 gauss, and isodynamic lines 12c and 12e, for example, respectively to 25 gauss. In addition, strength of magnetic force of the magnetic field line increases leaving from the boundary 12a of the south and north poles. "

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On Page 5, please amend paragraph [0021] as follows:

15 "On the other hand, as shown in Fig. 2B, after the magnet 634 12 is displaced, for example, 25 gauss isomagnetic plane 12c on the north pole side of the magnet 12 is located above the operating point 14a of the Hall IC 14. In this case, the Hall IC 14 is in an on-state and detection signals are output from the Hall IC 14. After that, when the iron piece 28 is located relatively far, the magnet 12 returns to the state before the displacement. "

On Page 10, please amend paragraph [0052] as follows:

20 "Screw holes 80 and 82 are used in the present embodiment to mount the case 10 on a required member by screws. In addition, not only the magnet 12 to switch on/off the Hall IC 14, but also the second magnet 72 to attract with the iron piece 28 is provided. The second magnet 72 is pipe-shaped, the upper side of Fig. 8C is the north pole, and the lower side is the south pole. Magnets 12 and 72 are respectively mounted on each end of a stainless arm 74 and a first pipe 76. Arm 74 whose cross section is a U shape is rectangular-shaped. The first pipe 76 is a cylinder with an outside diameter which is confined within the arm 74. "

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Replacement Drawings

Within the Office Action, the Examiner objected to the drawings. Accordingly, the Applicant is hereby attaching ten (10) sheets of drawings including Replacement Sheet 1/10, containing amended Figures 1A and 1B; New Sheet 5 2/10, containing a New Figure 1C; and Replacement Sheets 3/10 through 10/10, containing newly numbered sheets. All changes to the drawings are explained in detail below.

Amendments to Figures 1A and 1B

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The Applicants are currently amending Figures 1A and 1B. For the purpose of clarity, the Applicants have moved the location of reference numerals including the reference numerals for: the external connection cables 20, the mounting member 22, space 26, and case 10. Additionally, the connection cables 20 are 15 shown coupled with the input/ output pins 24.

For a proper understanding of the present invention's essential function, we add the upper stopper 31 in Fig. 1B and amend Fig. 1B to show the state that the magnet 12 contacts upper stopper 31 where the iron piece 28 is close to the 20 magnet 12. It corresponds to the phrase in Claim 1 "the magnetic material is displaced within the predetermined distance (d) from the body of the magnetic material detection device". Additionally, Figure 1B is amended to show the thickness of the plate spring 30. Finally, for a better understanding of configuration comprising connection cables 20, input/output pins 24, and the 25 Hall IC, although it is not essential to claimed inventions, three connection cables 20 and three input/output pins 24 are clearly shown.

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Addition of New Figure 1C

The Applicants are also adding Figure 1C. Figure 1C shows the state that the magnet 12 contacts lower stopper 32 where the iron piece 28 is far from the magnet 12. Additionally, Figure 1C shows the thickness of the plate spring 30.

Renumbering of Sheets 1/10 through 10/10

The Applicants are currently amending Figures 2A through Figure 11 to change the sheet numbering to account for the addition of New Figure 1C.